longer any actual fits, the man continued to suffer from occasional and sudden attacks of numbness in the left hand, similar in character to the aura which preceded his epileptic seizures. This numbness was accompanied with clenching of the fist, flexion of the wrist, pronation of the forearm, and retraction of the angle of the mouth on the same side. Now, these were precisely the movements repeatedly obtained by Dr. Ferrier when he applied an electrical stimulus to the ascending parietal convolution and angular gyrus in the brain of the monkey (*Proceedings of the Royal Society*, vol. xxiii. page 410). Dr. Dreschfeld, therefore, diagnosed syphilitic disease in that region, of a chronic inflammatory nature. Two years afterwards the patient died of phthisis, under Dr. Dreschfeld's care, and on October 2, 1876, Dr. James Ross made a post-mortem examination. He found the dura mater firmly adherent to the subjacent tissues at a distinctly localized spot over the region indicated, with softening of the superficial layers of the convolution. The rest of the brain was healthy. Dr. Dreschfeld pointed out in his remarks that the case was also a fresh confirmation of the truth of Dr. Hughlings Jackson's view, that epilepsy is due to an explosion of nerve-force in the cortical portion of the brain.—*Medical Times and Gazette*, October 28, 1876.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

6. *Salicylic Acid.*—Mr. J. A. ERSKINE STUART has published (*Edinburgh Med. Journal*, November, 1876) some experiments which he has made with this article, and gives the following as his conclusions: "That it is an antiseptic, deodorizer, and astringent, possessing these three properties in a marked manner. That it produces a specific action on the mucous membrane of the mouth, nose, and throat, is undoubted, as the catarrhal symptoms are produced in these regions whether it is taken by the mouth or rectum. That, from its rapid absorption by the blood, it is quickly carried through all parts of the economy, and its action is thus quickly manifested. The antiseptic properties being so marked, and its character being non-poisonous, it is sure to prove efficient in zymotic disease, in the same way that sulpho-carbolate of soda has been used.

"Salicylic acid, although proved by Godeffroy to be three times as strong an antiseptic as carbolic acid, is so difficult to dissolve, that its spray is not efficacious. Its use as an external antiseptic is thus much prevented, as, from its non-irritating, and non-poisonous qualities, it is otherwise eminently suited for use externally. As it is not likely to rise into much fame as an external antiseptic, I shall conclude with a few remarks as to how its action may be explained in three diseases in which it has been used with success, viz., rheumatic fever, typhoid fever, and diphtheria.

"No explanation of the changes which salicylic acid undergoes in the economy has yet been attempted, as far as I have observed in the journals. Is it not probable, as I mentioned previously, that salicylic acid, from the heat to which it is exposed in the alimentary canal, splits into carbolic and carbonic acids; that the carbonic acid, escaping as it passes down, causes the sensation of choking; and that the carbolic acid, coming in contact with gastric juice, forms an innocuous compound with some of its salts, and thus carries out its actions? This is the chemical explanation of its action, at least. By using the prescription before mentioned, combining the potash and salicylic acid, we get rid of the carbonic acid gas, and thus prevent much of the burning in the throat.

"*Rheumatic Fever.*—No doubt is expressed among practitioners as to the beneficial action of this drug in rheumatic fever. It has been tested largely in both hospitals and private practice, and found not only to shorten the disease, but also to lower temperature and relieve pain. Cases treated with continuous small doses are soon better. Its action in this disease is antipyretic. Possessing many of the properties of quinine, in the form of salicine, the temperature is lowered much in the same way as a large dose of quinine would do.

"*Typhoid Fever.*—In this disease, salicylic acid has been little used in this country, but from German sources we have reliable information regarding its application. Dr. Reiss, of Berlin, used as large a dose as four scruples. He found that often after the first dose, and usually after the second, the temperature fell below the normal, and remained so for twenty-four hours. In these cases, only one daily dose of the under-mentioned formula was given, and it was found that eight or ten doses were sufficient. The formula for a dose was as follows:—

"℞. Acid. salicyl.; Sodæ carb. āā ℈iv; Tinct. aurant. ʒj; Aquæ ℥iss. M.

"The result was that, generally after the fourteenth day of the fever, there was no abnormal rise of temperature. Dr. Reiss found that this result happened in the most of 260 cases which he treated.

"The action in typhoid fever may be explained thus: It acts in such enormous doses as an excellent astringent on the bowels, and also as an antiseptic on the system generally, as well as on the bowels.

"*Diphtheria.*—Wagner used it as a remedial agent in diphtheria, and also in an epidemic of it, with success. Frontheim also used it as a prophylactic in this disease, and it seems to me that it will be yet much used as a prophylactic in all febrile disease. My theory of its action in diphtheria is this, that it acts on the body generally as an antipyretic, and that, by setting up its specific catarrhal action on the mucous membranes of the throat, it helps to arrest the disease.

"In the *Edinburgh Medical Journal*, 1837, Dr. Blom ascribes the beneficial action of salicine to the fact that it acts as a tonic to the mucous membranes, and improves the character of the secretions. If this is the case, it may account in some manner for the action of salicylic acid in typhoid fever and diphtheria. Salicine is not so burning a substance to swallow as the salicylic acid, and it does not set up the characteristic catarrh which I mentioned."

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7. *Action of Alteratives.*—Dr. T. Lauder Brunton, in an interesting article on this subject (*Practitioner*, September, 1876), sums up the chief points in his article as follows:—

All medicines may be called alterative, but the name is specially applied to those which imperceptibly modify nutrition.

Nutrition is carried on in the intestine, and probably in the body, by means of ferments.

Alteratives probably modify nutrition by modifying the action of these ferments.

Nitrohydrochloric acid probably acts in headache, and also in the depression of spirits associated with oxaluria, by modifying the action of ferments in the intestine or liver.

Lithates are probably formed in the liver, and also in the muscles. The question arises—is nitrohydrochloric acid useful in stopping the lithates from disorder of the liver and digestion only; or is it also useful when the lithates arise from other causes?

Colchicum is probably useful in gout, by diminishing the production of uric acid.

Iodide of potassium acts on the lymphatics.

Mercury acts on the albuminous solids.

Is the action of iodides increased by giving salt?

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8. *Action of Gelseminum Sempervirens.*—Dr. Sidney Ringer and Mr. Wm. Murrell have published (*Lancet*, Oct. 21, 1876) the results of a series of experiments made by them to ascertain the influence of gelseminum on the circulation. These experiments they say show:—

"1. That gelseminum produces but little, if any, effect on the pulse.

"2. That it does not affect the blood pressure.

"3. That in man it probably acts on the respiratory centre less energetically than in the lower animals.

"4. That in man it acts on the muscles of the eye, and produces other symptoms before it influences the respiratory centre.

"5. That in man it, in all probability, affects the spinal cord before the respiratory centre.

"6. That it exerts no influence on the mind, and none on the cutaneous sensibility.

"7. That it does not affect the temperature."

9. *Action of Alcohol on the Brain.*—Mr. T. C. KINGZETT read before the British Association a paper on this subject. He said the question of what became of alcohol taken into the system had been extensively studied. Thudichum was the first to determine quantitatively the amount of alcohol eliminated by the kidneys from a given quantity administered, and the result he obtained was sufficient to disprove the elimination theory then widely prevailing. Dupré and many others continued these researches, from which, according to Dupré, they might fairly draw three conclusions: first, that the amount of alcohol eliminated per day did not increase with the continuance of the alcoholic diet; therefore, all the alcohol consumed daily must of necessity be disposed of daily, and, as it was certainly not eliminated within that time, it must be destroyed in the system; second, that the elimination of alcohol following the taking of a dose was completed twenty-four hours after the dose was taken; and, third, that the amount eliminated in both breath and urine was a minute fraction only of the amount of alcohol taken. In 1839, Dr. Percy published a research on the presence of alcohol in the ventricles of the brain, and concluded "that a kind of affinity existed between the alcohol and the cerebral matter." He further stated that he was able to procure a much larger proportion of alcohol from the brain than from a greater quantity of blood than could possibly be present within the cranium of the animal upon which he operated. Dr. Marcet, in a paper read before the British Association in 1859, detailed physiological experiments which he considered to substantiate the conclusions of Dr. Percy, inasmuch as they demonstrated that the alcohol acted by means of absorption on the nervous centres. Lallemand, Perrin, and Duroy had, moreover, succeeded previously in extracting alcohol from brain-matter in cases of alcoholic poisoning. But all these researches did not show the true action, if any, of alcohol on cerebral matter, and no method of investigation was possible until the chemical constitution of the brain was known. Thudichum's recent researches in this direction, together with some more recent investigations by Thudichum and the author, had placed within reach new methods of inquiry. In his research, he (Mr. Kingzett) had maintained the brains of oxen at the temperature of the blood, in water, or in water containing known amounts of alcohol. The extracts thus obtained had been studied in various ways, and submitted to quantitative analysis, while the influences exerted by the various fluids on the brain had been also studied. These influences extended in certain cases to hardening and to an alteration in the specific gravity of the brain-matter. Water itself had a strong action on brain-matter (after death), for it was capable of dissolving certain principles from the brain. These principles included cerebrine, myeline, and apparently a new phosphorized principle insoluble in strong alcohol, together with that class of substances generally termed extractive. At the same time, the brain swelled and attained a smaller specific gravity, thus, in one case, from 1036 it became 1007. Water, however, dissolved no kephaline from the brain. Alcohol seemed to have no more chemical effect on the brain than water itself, so long as its proportion to the total volume of fluid did not exceed a given extent. The limit would appear to exist somewhere near a fluid containing 35 per cent. of alcohol. But, if the percentage of alcohol exceeded this amount, then not only a larger quantity of matter was dissolved from the brain, but that matter included kephaline. Such alcoholic solutions also decreased to about the same extent as water the specific gravity of brain substance, but not from the same cause; that was to say, not merely by the loss of substance and swelling, but by the

fixation of water. Many difficulties surrounded the attempt to follow these ideas into life, and to comprehend in what way these modes of action of water and alcohol on the brain might be influenced by the other matters present in blood. From Thudichum's researches it followed that the brain must be subject to every influence affecting the blood, and it was probable that what was written above regarding the action of water on the brain was likewise true of an extraordinary watery serum in life. But, if the serum were rich in salts, those salts, by a power of combination which they had for the cerebral principles, would preserve the integrity of the latter. On the other hand, it was difficult to see how any of the matters known to exist in the blood could prevent alcohol, if present in sufficient amount, from either hardening the brain (as it did after death) or dissolving traces of the principles to be henceforth carried away in the circulation; that was to say, should physiological research confirm the stated fact that the brain in life absorbed alcohol and retained it, it would almost follow of necessity that the alcohol would act as he had indicated, and produce disease, perhaps delirium tremens.—*Brit. Med. Journ.*, Sept. 23, 1876.

10. *Action of Strychnia applied directly to the Integuments of the Nostrils in Man.*—Dr. Moller states that strychnia applied with a brush to the nostrils, causes an exceptional acuteness of the olfactory sense, and will restore the sense of smell to those affected with anosmia. He ascribes this phenomenon to the direct irritation produced by the application to the nervous terminations. *Revue des Sciences Médicales*, Oct., 1876, from *Ugesk. for Läger*, R. 3, Bd. 19.

11. *Bromide of Potassium as a Caustic.*—In a paper read at the recent meeting of the French Association for the Advancement of Science, M. Peyrand, of Libourne, claims for bromide of potassium certain properties hitherto but slightly recognized—properties which will extend the already wide range of the therapeutical uses of this salt. He found that subcutaneous injection in rabbits of concentrated solutions of the salt led to sloughing of the skin, and from this he was led to try the value of what he considered to be the escharotic properties of bromide of potassium upon malignant and other growths, either by means of injections into the tumour or by the application of the powdered salt to a raw surface. The action of the salt is completely resisted by the tegument. His first clinical experiment on the subject took place in April, 1874, when, by means of daily applications of powdered bromide, he effected the removal within twenty-eight days of an epitheliomatous growth on the face. He has since had equally good results from this treatment of atonic ulcers of the legs, rapid cicatrization following the separation of sloughs produced by the application. In such cases he uses either the powder or an ointment of one part in five, or a mixture (one in ten) of glycerine and the bromide. In many skin affections, as chronic eczema, pityriasis, and acne, in phagedæna, ulcerative stomatitis, and many other local inflammatory disorders, he has found it of use. As a local hæmostatic, a solution of one in fifty has served for epistaxis, and as a general hæmostatic its success in many cases of hæmoptysis and metrorrhagia was very marked, where ergot, perchloride of iron, and rhatany had failed.—*Lancet*, Sept. 30, 1876.

12. *Action of Pilocarpin on the Submaxillary Gland of the Dog.*—Mr. J. N. Langley gives (*Journ. Anat. and Phys.*, October, 1876) the following results of experiments made by him in the Physiological Laboratory, Cambridge.

In small doses, *i. e.* up to 30 mgr., pilocarpin exerts an action on the gland very similar to that produced by stimulation of the chorda tympani.

It causes a rapid secretion, and a considerable increase of blood-flow; both secretion and blood-flow gradually declining.

Its effects are little if at all altered by section of the chorda tympani or of the sympathetic nerve.

Stimulation of the chorda tympani increases the pilocarpin effects, *i. e.* the nerve is functionally unaltered.

Stimulation of the sympathetic diminishes its effects, so that this nerve too is functionally unaltered.

The secretion is stopped by injecting atropin (a fact for some time known), but a quantity of atropin sufficient to paralyze the chorda tympani does *not* prevent a relatively large quantity of pilocarpin from producing its ordinary results. In fact, the secretion or absence of secretion is dependent on the relative quantity of the two poisons present, just as in the stand-still or beat of the heart.

In *larger doses.* Instead of causing a stronger saliva-flow, it causes none at all,[1] and further prevents the chorda tympani from producing any secretion.

It considerably diminishes the blood-flow through the gland, as well as the effect of the chorda tympani on the blood-flow.

It does not, however, stop the sympathetic secretion. The action indeed is not very dissimilar to that of atropin; this agrees with its action on the vagus and inhibitory apparatus of the heart, where in large doses it prevents any inhibition of the heart from stimulation of the vagus or of the junction of the sinus venosus, just as atropin does.

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13. *Second Series of Experiments on the Biliary Secretion of the Dog.*—Prof. RUTHERFORD and M. VIGNAL in their first series of experiments (see No. of this Journal for January, 1876, pp. 258–9) gave an account of the action of several articles on the biliary secretion of the dog. In this second series (*Journ. Anat. and Phys.*, October, 1876) they give the results of their experiments with several other cholagogues. We give the results below of their experiments:—

1. With Euonymin. Five grains of this, when mixed with a small quantity of boiling water and placed in the duodenum, powerfully stimulated the liver. 2. Coincident with the marked action of the liver there was only a slight increase of intestinal secretion. Seeing that Mr. Clothier found "euonymin" to be an active purgative in the human subject, these experiments suggest that the purgative effect may be chiefly due to increased secretion of bile. At any rate these experiments clearly show that this substance is worthy of receiving far greater attention in practical medicine than it has done hitherto.

2. Sanguinarin. 1. In one experiment three grains, in another experiment one grain of "sanguinarin" when mixed with a small quantity of bile and water and placed in the duodenum powerfully stimulated the liver. 2. It rendered the bile more watery, nevertheless it caused the liver to secrete more biliary matter in a given time. 3. The secretion of the intestinal glands was slightly increased by these doses. These results show that the statements of Tully and Mothershead ought not to be treated with indifference and neglect, as they at present appear to be, in practical medicine.

3. Iridin. 1. Five grains of iridin when mixed with a little bile and water and placed in the duodenum very powerfully stimulated the liver. It is not so powerful as large doses (four grains) of "podophyllin," but it is more powerful than "euonymin," as is shown by the amount of bile secreted per kilogramme of dog; the fractions for the two "euonymin" experiments being 0.4789 cc. and 0.4678 cc., whereas in the "iridin" experiments they are 0.537 cc. and 0.638 cc. The high fraction in the second iridin experiment probably resulted from a much smaller dog getting the same dose as in the first experiment, the smaller liver being thereby stimulated to do a proportionally greater amount of work. 2. Iridin is also a decided stimulant of the intestinal glands. Judging from these experiments its irritant effects on the intestinal mucous membrane are decidedly less than those of "podophyllin," while the purgative effects are greater than in the case of "euonymin." The statement of the writer in the *Lancet* that in man "it is gentler in its action than podophyllin" is fully supported by these experiments, and there seems every reason why this substance should be removed from its present obscurity and placed in a prominent position in practical medicine.

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[1] The transient secretion ensuing immediately after injection is not here regarded as a proper effect of a strong dose, since the larger the dose the slighter and more transient it becomes.

4. Leptandria. 1. Leptandria when mixed with bile and placed in the duodenum undoubtedly stimulates the liver, but its power is very feeble as shown by the small secretion of bile per kilogramme of dog notwithstanding the large doses given. It excites the liver to secrete bile, having the ordinary composition. Unless the biliary solvent be present, "leptandria" produces scarcely any appreciable effect. In this respect it resembles many other resinous substances, *e. g.* "podophyllin." 2. It is a feeble stimulant of the intestinal glands.

5. Ipecacuan. 1. Sixty grains of powdered ipecacuan mixed with a small quantity of bile and placed in the duodenum powerfully stimulated the liver. Even three grains had an effect on a dog weighing 6.8 kilogrammes very nearly as great as the effect of sixty grains on a dog weighing 27.2 kilogrammes; the amount of bile secreted per kilogramme of dog being nearly the same in both cases. 2. The bile secreted under its influence was of normal composition as regards the biliary matter proper. 3. No purgative effect was produced, but there was an increased secretion of mucus in the small intestine. The composition of the bile did not afford any evidence of an increased secretion of mucus having taken place from the glands of the bile-ducts.

The increased biliary flow that followed ipecacuan could not in these experiments be ascribed to any relaxation of "spasm of the bile-ducts," for that no such thing existed was clearly shown by the free flow of the bile before the substance was given. Nor could it be owing to contraction of the gall-bladder, for the cystic duct was clamped. Nor can it be ascribed to contraction of the bile-ducts, for the increased flow was far too prolonged to be attributable to any such cause. It is, therefore, certain that this substance, like the others, has the power of stimulating the *secreting* apparatus of the liver. This being now proved as regards the dog, it can scarcely be doubted that the *modus operandi* is the same in man. The results of these experiments will, therefore, lead to new speculations regarding the pathology of dysentery; for *every step towards greater accuracy of knowledge regarding the* modus operandi *of any therapeutic agent is certainly calculated to advance our knowledge of the true nature of the pathological condition that is relieved or cured by it.*

6. Colocynth. 1. This is a hepatic stimulant of considerable power. It renders the bile more watery, but nevertheless increases the secretion of biliary matter. 2. It is also a powerful stimulant of the intestinal glands.

7. Jalap. 1. This is a hepatic stimulant of considerable power. It renders the bile more watery, but at the same time increases the secretion of biliary matter. 2. Its effect on the liver is, however, far less notable than its effects on the intestinal glands. Its hydragogue cathartic effects on these were fully manifested in these experiments.

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14. *Anæsthesia by Intravenous Injection of Chloral.*—The method of producing anæsthesia by the injection of solution of chloral hydrate into the veins, first practised by M. Oré, of Bordeaux, still finds advocates, and has been employed quite recently with success. The dangers of the practice far outweigh, in our opinion, its supposed advantages and this is the conclusion at which most experimenters have arrived. Drs. Tizzoni and Fogliata have undertaken a series of experiments with the view of elucidating the following questions: 1. Is chloral when injected into the blood a true anæsthetic? 2. Is the method free from great dangers? 3. What are these dangers? And 4. Upon what tissue elements does chloral act? From numerous experiments, they arrived at the following conclusions: 1. That although chloral, when injected into the veins, is a powerful hypnotic, it is not a true anæsthetic; the cutaneous sensibility ceases only when a very large dose is given, and the cornea almost never becomes entirely insensible. 2. That the process is very dangerous; for the exact dose cannot be regulated, the action is highly variable in different individuals, there is no means of moderating the action if excessive, and that it may lead to phlebitis. Add to this, that a large quantity of fluid is injected suddenly into the circulation, and may lead to ill effects, or air may be introduced. In an excessive dose, chloral produced death by its direct action on the heart, the action of which ceased in diastole. 3. Their experiments led them to be-

lieve that the poison acts directly on the muscular fibres of the heart; that when locally applied it causes contraction of these fibres, and thus produces a tetanic systole of the ventricles, but when injected into the blood or beneath the skin, or given by the mouth, it excites the "diastolic extensibility" of the muscular fibres, and thus produces a forced diastole. They add that subcutaneous injection of chloral is not more desirable, as it causes local muscular spasm, and hence absorption is slow and irregular, and that it is liable to cause gangrenous abscesses. As an antidote in poisoning by chloral they recommend the cold douche to the head and spine; and consider injections of strychnine, quinine, atropine, and curare injurious. These results will, we trust, deter English surgeons, at least, from a method of procuring anæsthesia, which is at once so gratuitously dangerous, and so doubtful in its effects.—*Lancet*, Nov. 11, 1876.

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15. *Symptoms resulting from Anæsthesia by Ether in Young Subjects.*—Dr. LEON TRIPIER read a paper on this subject before the French Association for the Advancement of Science. He related three cases in which the administration of ether for surgical operations was attended by an arrest of respiration, and though, after long efforts at restoration recoveries took place, the patients were placed in a most alarming condition. He also instituted experiments on young cats with ether, and found, as in young human subjects, an arrest of respiration often occurred. Older animals were less liable to this accident. He, therefore, considers anæsthesia by ether in young subjects as dangerous, and that chloroform for them should be always preferred.—*Gaz. Hebdom.*, Sept. 15, 1876.

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16. *On the Employment of Iron in the Treatment of Chlorosis.*—Dr. DUJARDIN-BEAUMETZ entertains some doubts as to the utility of ferruginous preparations in the treatment of chlorosis, and he gives reasons for his scepticism. Before admitting, he says, that in the work of organic reconstruction iron is superior to other medicines, we ought to see the quantity of iron which disappears from the economy as a consequence of anæmia. Take for example a young girl of the weight of 60 kilogrammes (a kilogramme is rather more than 2 lbs.). According to the researches of Boussingault the proportion of iron would be, in relation to the weight of the whole body, represented as .00011, which would give, in the case of the girl, 5.454 of iron. But the iron is distributed in various parts, and the blood contains only .5063 of iron in 1000 parts so that the quantity of iron contained in the girl's blood would be about 2 to 2½ grammes (a gramme is about 15 grains). But this quantity does not belong exclusively to the globules, a certain part being distributed to the albumen and the fibrine, and thus the quantity reserved for the globules is diminished. These last alone undergo a more or less marked diminution in chlorosis, but the deficiency never reaches more than from a quarter to a third of the total amount of the globules, so that in admitting the numbers in the given case it is found that the diminution of iron in this disease is very small and is represented by figures varying between 10 and 50 centigrammes at the utmost. This small loss of iron is restored every day by the food. The arguments thus adduced show that the ferruginous preparations may act in chlorosis, not by replacing the iron which has disappeared, but in stimulating the digestive functions and promoting nutrition and assimilation. Dr. Dujardin-Beaumetz does not deny the beneficial effects of iron in chlorosis, but he thinks that the results have been much exaggerated, and that, in a great number of cases, hygienic measures have been superior to the iron treatment. He adduces his own experience in proof of this view, and he states that in the case of several young women in a school which he attended, and who were suffering from chloro-anæmia, the symptoms were not at all relieved or improved by iron, but were cured by the introduction of hydrotherapeia and gymnastics in the institution where the patients were being educated.—*Brit. and For. Med.-Chir. Rev.*, Oct. 1876, from *Bull. Gén. de Therap.*, May 15, 1876.